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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,125	10/10/2001	Joerge Baumgart	22549845	4260

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EXAMINER

SEVER, ANDREW T

ART UNIT	PAPER NUMBER
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2851

DATE MAILED: 05/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/807,125

Examiner

Andrew T Sever

Applicant(s)

BAUMGART ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-26 is/are allowed.
- 6) ☒ Claim(s) 14-16 is/are rejected.
- 7) ☒ Claim(s) 17-19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is too long. Correction is required.

See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities: There are no headings.

Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

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- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shetty et al. (US 5,189,490 as provided by the applicant) further in view of Hess et al. (US 3,877,814.)

Shetty teaches in figure 3 an apparatus that detects small periodic patterns on surfaces which uses a method comprising illuminating the surface of the sample to be tested with a monochromatic coherent light beam from a laser (22) at an angle. Further Shetty's apparatus's method of detection then detects a diffraction image of the period wave patterns produced in the secondary light returned by the surface and detected by a video-camera (40). Shetty teaches in column 6 lines 3-14 that the image of the period wave patterns (a diffraction image) is then displayed on a matt panel (display screen 36 as is claimed in applicant's claim 15) and the video camera (40) record the image that is then digitized by measuring the intensity distribution of the secondary light as a function of position over an image area of the diffraction image (column 6 lines 3-14 and as is claimed by applicant's claim 16) and processed by the computer which obviously include measurements with respect to occurrence of intensity maxima. In column 6 lines 46-63,

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the applicant teaches that the computer then determines a calibration curve and the operator is able to determine the process by which the work piece was measured.

Although Shetty teaches that work pieces is illuminated by the primary beam at an angle, which from figure 3 appears to be grazing, Shetty does not teach a constant angle of incidence within an angular range of approximately $83\pm 2^\circ$. Hess teaches a method for detecting optical distortions on glass such as concave or convex imperfections. As shown in figure 1, Hess illuminates the surface of the glass being tested with a light beam, which reflects off a mirror (15) and is directed onto the work piece (glass) at a large angle of incidence with respect to the surface normal to the surface of the work piece and approximately at right angles to expected periodic wave patterns. In column 5 lines 26-40, Hess teaches that the angle of incidence is 84.5° , which is in the claimed range. Hess teaches that this particular angle was chosen because the intensity of the reflected beams from the bottom surface through the top surface are minimized and the variations in intensity of reflected beams are caused by optical distortions in the top surface and not by defects in the glass ribbon or by optical distortions in the bottom surface. Although not all surfaces are transparent and therefor for many applications the distortions from the bottom surface are irrelevant, however eliminating other defects in the material and optical effects other surface roughness is useful and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made when detecting small periodic wave patterns in surfaces to have the primary beam be directed onto the work piece at an angle of incidence of approximately $83\pm 2^\circ$ as taught by Hess.

Allowable Subject Matter

5. Claims 20-26 are allowed.
6. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter:
Claims 17-19 are indicated as being allowable if rewritten in independent form including all of the limitation of the rejected base claims namely claim 14 and in the case of claim 17 claim 16.
 - a. Claim 17 claims that the intensity distribution of the secondary light is subjected to an autocorrelation, however neither Shetty nor Hess teach such an autocorrelation function and therefore claim 17 would be allowable since no other prior art of record that is obviously combinable with Shetty in view of Hess or by itself teaches this function.
 - b. Claim 18 claims that the spacing of neighboring intensity maxima is determined and period of the wave pattern is deduced therefrom. Although this is well known to those of ordinary skill in the art, it is not taught in the surface roughness measurement art to be something that should be performed. The Shetty reference teaches that the surface roughness is evaluated by a computer based on the observed diffraction pattern, however the method by which this diffraction pattern is evaluated is not discussed. No suggestion is provided by Shetty for a motivation or reason for the system or a user to evaluate or even want to know what the period of the wave pattern is and therefore based on the prior art of record there is no motivation for one of ordinary skill in the art at the time of the

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invention to combine the very well know method of measuring diffraction patterns to determine the spacing of neighboring intensity maxima so that the period of the wave pattern and then combining that with the method of Shetty in view of Hess for evaluating surface roughness. Claim 19 is dependent on claim 18 and would therefore also be allowed if claim 18 was re-written in independent form including the subject mater of rejected claim 14.

c. Independent claim 20, claims a device which performs the method of rejected claim 14. Claim 20 further claims, however, that it comprises a meter, which is adapted to be placed in a defined way on a work piece surface with the primary-light source and secondary light beam being within the meter. As can clearly be seen from figure 2 and 3 of Shetty et al., Shetty's device is not a meter that is place on a work piece, rather the work piece is placed inside Shetty's device. The prior art of record did not teach such a device of a size that the meter is placed on the work piece as is claimed.

US patent 5,179,425 to Reinsch et al. teaches a hand held paint inspection meter, which in figure 2 is shown to comprise of a light source (56) which emits a beam of light which strikes a surface (64) to be tested. The secondary beam of light is then reflected towards a photo detector (90). Reinsch, however does not teach striking the surface at an angle of approximately 83 degrees. Further other then hindsight it would not have been obvious to modify Shetty in view of Hess to make it a hand held device like that taught by Reinsch. Claims 21-26 are dependent on claim 20 and are therefore also allowed.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,488,476 to Mansfield et al. teaches an apparatus and method for measuring surface roughness that also uses optical diffraction does not appear to calculate the period of the wave pattern nor evaluate an autocorrelation function. It is not placed on the sample, rather it is placed over the sample as shown in figure 2.

US 6,249,351 to de Groot teaches using a grazing angle to analyze a sample with an interferometer.

US 4,715,709 to Sekine et al. teaches in figure 8 a device for detecting surface flaws at various angles of primary beam incidence.

US 4,866,287 to Weber, is an Optical surface measuring apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 703-305-4036. The examiner can normally be reached M-F 8:30-5:00.

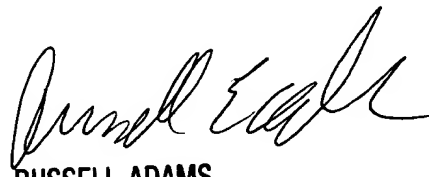
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russell Adams can be reached at 703-308-2847. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

AS
May 10, 2003



RUSSELL ADAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800